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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,407	04/14/2005	Manfred Roessler	10191/3926	8244

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EXAMINER

MCGRAW, TREVOR EDWIN

ART UNIT	PAPER NUMBER
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3752

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03/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/531,407	Applicant(s) ROESSLER ET AL.	
	Examiner Trevor E. McGraw	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/14/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gray (US 4,245,789) in view of Maier et al. (US 5,732,888).

In regard to Claim 7, Gray teaches a fuel injector with a solenoid assembly (14), an armature (73) acted upon by a spring (77) in the closing direction, a valve needle (72) that is connected to the armature (73) by force locking where a valve closure member (Figure 1) is formed which forms a sealing seat with a valve needle surface (Figure 1) where the armature stop face (73s) strikes against a stop face (63s) of an inner pole (63) where the surface structure of the armature stop face (73s) and the stop face of the inner pole (63s) have raised and recessed dome shaped areas (Figure 2) at a height difference of 0.4 μm to 0.8 μm for the inner pole stop face (63s) and 0.2 μm to 0.3 μm for the armature stop face (73s).

However, Gray fails to teach an armature stop face (73s) and inner pole piece being coated with a plurality of chromium layers where the height difference between the raised and recessed dome shaped areas are in a height difference between 5 μm to 10 μm .

On the other hand, Maier et al. teaches that it is old and well known in the art to have a coating used with an armature to provide a wear resistance medium for the armature.

It would have been obvious to one with ordinary skill in the art at the time of the present invention to modify the armature stop face and inner pole piece of Gray to be made with a chromium coating as taught by Maier et al. (US 5,732,888) to provide for a high resistant coating to preclude or reduce operational wear per cycle of the fuel injector.

It is also obvious to one having ordinary skill in the art at the time the present invention was made to change the height difference between the raised and recessed dome shaped areas as taught by Gray to between 5 μm and 10 μm as discovering the optimum or workable ranges only involves routine skill to one having ordinary skill in the art.

Furthermore, it is further obvious to one having ordinary skill in the art at the time the present invention was made for the raised and recessed dome shaped areas to be reduced to between 4 μm and 5 μm as discovering the optimum value of a result effective variable further involves routine skill for one having ordinary skill in the art.

Response to Arguments

Rejection under 35 USC § 103

Applicant's arguments filed 12/14/2007 have been fully considered but they are not persuasive. Applicant's amendment to the Claim has been addressed and required minimal revision to the applied rejection mailed 07/18/2007. Examiner cannot agree with Applicant's contention regarding the armature stop face and inner pole piece are not obvious to one having ordinary skill in the art. Such changes are elementary and well within one's skill in the art. Accordingly, Examiner maintains the rejection to Claim 7 as all the limitations of the Claim are taught by Gray in view of Maier et al. One having ordinary skill would reasonably expect a level of success of the combined references. And the motivation as stated above was applied properly to meet the conditions of 35 USC § 103 (a).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trevor McGraw whose telephone number is (571) 272-7375. The examiner can normally be reached on Monday-Friday (2nd & 4th Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached on (571) 272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Dinh Q Nguyen/

Primary Examiner, Art Unit 3752

/T. E. M./
Examiner, Art Unit 3752